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R E M A R K S

Claim 1 was rejected under 35 USC 102 as being anticipated by Bialik, US Patent 6,389,006. Applicant respectfully traverses.

Applicant's representative held a telephone conversation with the Examiner, during which the Examiner suggested that submitting a response with an amended claim might be better than to just argue other limitations. With understanding that there is no commitment from the Examiner to allow the case, the Examiner's suggestion is adopted. The undersigned thanks the Examiner for the courtesy extended.

In the response to the last Office action applicant asserted that "the 120 samples are NOT used in the generation of the synthesized speech." While applicant maintains that the statement was correct, from Examiner's "Response to Arguments" remarks it is now realized that -- as strange as it sounds -- the Examiner is also correct. The problem stems from the ambiguity inherent in the word "used."

The reference teaches that the classifier is based on a cross correlation maximization algorithm, and it also teaches that the last 120 samples are used in the cross correlation that determines the interpolation index candidate. Although there is no teaching as to how the interpolation index candidate yields the estimation pitch value, it is a fair guess that it somehow does. It should be noted, however, that it is a guess and not a "teaching" in the sense of 35 USC 102. Accepting the guess as true, the 120 samples are used to determine the pitch period, and the determined pitch period is used to synthesize the speech. This is an indirect use, but it is a use nevertheless and, in that sense, the Examiner is correct.

Looking further into the teachings of the reference relative to synthesizing speech that is missing because one or more frames are not properly received, the passage cited by the Examiner states that

the current frame is regenerated with periodic excitation having a period equal to the value provided by the classifier. If the frame erasure state continues for the next two frames, the regenerated vector is attenuated by an additional 2 dB for each frame. After three interpolated frames, the output is muted completely.

It appears quite clear from the above that the missing speech is generated with a periodic excitation having a pitch period as specified by the classifier. The passage is silent, however, on whether the 120 last speech samples are found in the synthesized speech

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corresponding to the missing frame(s). One might surmise that samples of the “periodic excitation having a period equal to the value provided by the classifier” are obtained somehow. But, the reference does not teach how those samples are obtained and, actually, the reference also does not teach what is are those samples that included in the “periodic excitation.” What is taught, merely, is that if two frames worth of sample are needed to be created, the created samples are attenuated 2 dB and that thereafter the output is muted completely.

To summarize,

- The reference teaches using 120 samples of previously synthesized speech in a classifier to determine the pitch, and in that sense contribute to the eventually generated a periodic excitation.
- The reference does not teach what is included in the periodic excitation, although it teaches that the periodic excitation has a period equal to the value provided by the classifier, and that it is attenuation when it extends to more than one frame.

Claim 1, on the other hand, specifies synthesizing a portion of the speech signal corresponding to the unavailable packet by using a portion of the previously formed speech signal, through use of a number of pitch periods of the previously formed portion where

- the number of pitch periods of the previously formed portion in such synthesis
- is greater for speech of a fundamental frequency above a threshold than for speech of a fundamental frequency below the threshold

Reasons for determining that claim 1 prior to its current amendment is not anticipated by the reference:

1. The 120 samples used in the classifier are NOT taught as corresponding to a pitch period (a whole number of pitch periods, or otherwise). It is an arbitrary number that is independent of pitch periods. Therefore there is no anticipation of claim 1.
2. Claim 1 defines the number of pitch periods as a step function. The notion of a threshold (below which the number is smaller than above the threshold) excludes the idea of a continuous function of $y=f(x)$ where as x increases y also increases. Since the

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number of 120 samples is fixed, even if expressed in the form of a number of pitch periods (e.g. 1.23145 pitch periods), there is no step function. Hence, there is no anticipation of claim 1.

Reasons for determining that amended claim 1 is not anticipated by the reference:

In light of the Examiner's "response to arguments" remarks, it is now realized that claim 1 contains an ambiguity with respect to the term "used," and possibly an ambiguity with respect to the terms "number" and "pitch periods."¹ Applicant must comply with the requirements of 35 USC 112, second paragraph, even in the absence of a rejection and, accordingly, claim 1 is amended. As amended, the ambiguities are resolved and claim 1 is even more clearly not anticipated by the reference. Specifically, amended claim 1 specifies that the samples of a number of pitch periods are actually included and are found in the synthesized speech, and also specifies that the number of those pitch periods is an integer number. In other words, when constructing a missing frame or a number of frames in accord with the principles defined by claim 1, the samples to N pitch periods are used – in the sense of being included, and that number N is one integer value when the pitch period is below a certain threshold, and a larger integer value when it is above the threshold. The cited art has nothing akin to the limitations of amended claim 1 and, therefore, there is no anticipation of claim 1.

Claim 2 was rejected under 35 USC 112, second paragraph. The claim is amended to overcome the rejection.

¹ With respect to "used," as indicated above the word covers indirect use, as well as actual use; with respect to "number" when associated with pitch periods, in the context of the speech processing art that means an integer number, but the word itself encompasses non-integers; and with respect to "pitch period" it is not the period that is used but rather the samples of the pitch period.


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In light of the above amendments and remarks, applicant respectfully submits that the amendment places the case in condition for allowance. Allowance of the claims at issue is respectfully solicited.

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Respectfully,
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By


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